

REMARKS

Favorable reconsideration of this application in view of the foregoing amendments and remarks to follow is respectfully requested. Since the present Response raises no new issues, and in any event, places the application in better condition for consideration on appeal, entry thereof is respectfully requested under the provisions of 37 C.F.R. § 1.116.

Before addressing the specific grounds of rejection raised in the present Office Action, applicants have amended independent Claims 1, 9 and 18 to positively recite that the claimed permanent passivation layer *prevents bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%*. Support for the amendment to the independent claims is found at Page 2, lines 16-25; Page 4, lines 10-12; Page 5, line 30-Page 6, line 4; and Page 9, lines 19-21.

Applicants respectfully submit that the above amendment to Claims 1, 9 and 18 does not raise any new issues since the added features have been argued throughout the prosecution of the present claims. In an attempt to advance prosecution, application have amended Claims 1, 9 and 18 to positively recite the arguments previously of record in this case.

Since the above amendment to the claims does not add new matter into the specification, nor do they raise any new issues, applicants respectfully request that the amendment be entered.

Claims 1, 9, 13, 14, 15 and 18 stand rejected under 35 U.S.C. § 103 as allegedly obvious over the combined disclosures of applicants' admitted prior art ("AAPA"), U.S. Patent No. 5,177,567 to Klersy, et al. ("Klersy, et al."), and SEDRA & SMITH,

MICROELECTRONIC CIRCUITS (4TH Ed 1998) ("Sedra and Smith"). Claims 2 and 5-8 stand rejected under 35 U.S.C. § 103 as allegedly obvious over the combined disclosures of AAPA, Klersy, et al., Sedra and Smith, and U.S. Patent No. 6,331,492 to Misium, et al. ("Misium, et al."). Claims 3, 4, 16, and 17 stand rejected under 35 U.S.C. § 103 as allegedly obvious over the combined disclosures of the AAPA, Klersy, et al., Sedra and Smith, and U.S. Patent No. 4,987,102 to Nguyen, et al. ("Nguyen, et al."). Claims 10 and 11 stand rejected under 35 U.S.C. § 103 as allegedly obvious over the combination of the AAPA, Klersy, et al., Sedra and Smith, and U.S. Patent No. 4,757,027 to Vora ("Vora"). Claim 12 stands rejected under 35 U.S.C. § 103 as allegedly unpatentable over the combination of the AAPA, Sedra and Smith, and U.S. Patent No. 6,268,779 to Van Zeijl ("Van Zeijl").

Applicants respectfully submit that in the second-fifth obviousness rejections the Examiner has once again referred to a Hasegawa reference. Applicants have again reviewed their file, but cannot find any Hasegawa reference that is of record in the present application. It appears from the Examiner's comments in the present Office Action that the Examiner meant to recite Klersy, et al. instead of Hasegawa. Thus, the rejections have been treated as if Klersy, et al. was one of the applied references. Applicants respectfully request that the Examiner withdraw the present Final Rejection and provide a new Office Action that clearly indicates the references cited in each rejection. If a Hasegawa reference was intended to be applied, applicants respectfully request that the Examiner provide a proper recitation of the reference in the next Office Action. Regardless whether a new Office Action will be issued, the applicants hereby request that in the next communication from the Examiner the references relied upon in

forming each rejection should be clearly indicated. This is essential if the applicants are to appeal the application.

Applicants respectfully submit that Claims 1-18 are not obvious from the combined disclosures of applied references cited in the present Office Action since the combined references do not teach or suggest a heterojunction bipolar structure or fabrication method wherein a permanent passivation layer is present which *prevents bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%*. Applicants respectfully submit that the combined affects of substantially eliminating shorts and improving the bipolar yield by as much as the claimed amount is unexpected and is not obvious from the applied references.

AAPA shown in FIG. 1 of the present application is defective since it fails to teach or suggest a permanent conformal passivation layer formed on the exposed sidewalls of an emitter. AAPA discloses a heterojunction bipolar transistor structure, which does not include a conformal passivation layer. The heterojunction bipolar transistor structure, as disclosed in AAPA, typically results in a 20-30% bipolar yield loss. The loss associated with the SiGe bipolar transistor structure, as disclosed in AAPA, is attributed to the presence of silicide bridges between the emitter and SiGe body, which introduce shorts to the structure during silicidation. Applicants' claimed method and structure utilize a permanent conformal passivation layer to avoid the formation of silicide bridges and losses associated with prior art devices.

The defect associated with AAPA is not alleviated by the disclosure of Klersy, et al. since the applied secondary reference does not teach or suggest that by forming a permanent passivation layer on the emitter prior to silicidation one can *prevent the*

bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%. Klersy, et al. provide a thin-film structure for solid state thin-film electrical switching devices which includes a passivation layer that is deposited over the thin-film structure. In accordance with Col. 10, lines 30-34, Klersy, et al. disclose that the passivation layer provides protection against environmental contamination and/or unintended electrical contact with other devices or circuits. The Klersy, et al. disclosure does not teach, suggest or insinuate that by forming a permanent passivation layer on the emitter prior to silicidation one can *prevent the bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%.* Specifically, the combined affects of short prevention and improved bipolar yield is not taught or suggest in Klersy, et al.

Indeed, Klersy, et al. do not include a bipolar emitter therefore they could not have recognized that that by forming a permanent passivation layer on the emitter prior to silicidation one can *prevent the bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%*

Sedra and Smith do not fulfill the deficiencies of AAPA and Klersy, et al. Sedra and Smith, referring to page 222, disclose a bipolar junction transistor consisting of three semiconductor regions; the emitter, the base region, and the collector region. Sedra and Smith fail to teach or suggest that by forming a permanent passivation layer on the emitter prior to silicidation one can *prevent the bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%,* as recited in Claims 1, 9 and 18.

Misium, et al. do not fulfill the deficiencies of the combined disclosures of AAPA, Klersy, et al., and Sedra and Smith. Misium, et al., referring to Col. 3 lines 49-53, are directed to a process for rendering a silicon dioxide layer resistant to etch chemistries used in integrated circuit component manufacturing, such as HF. Misium, et al. fail to teach or suggest that by forming a permanent passivation layer on the emitter prior to silicidation one can *prevent the bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%*, as recited in Claims 1, 9 and 18.

Nguyen, et al. do not fulfill the deficiencies of the combined disclosures of AAPA, Klersy, et al., Sedra and Smith. Nguyen, et al. disclose a method for forming high purity thin films on a semiconductor substrate, where the preferred method of thin film deposition is plasma enhanced chemical vapor deposition. Nguyen, et al. fail to teach or suggest that by forming a permanent passivation layer on the emitter prior to silicidation one can *prevent the bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%*.

Vora does not fulfill the deficiencies of the combined disclosures of AAPA, Klersy, et al., and Sedra and Smith. Vora relates to techniques for making vertical transistor structures in islands of an epitaxial silicon layer. Vora fails to teach or suggest that by forming a permanent passivation layer on the emitter prior to silicidation one can *prevent the bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%*.

Van Zeijl does not fulfill the deficiencies of the combined disclosures of AAPA, Klersy, et al., and Sedra and Smith. Van Zeijl relates to an integrated voltage controlled

oscillator including varactors and fixed capacitors in a stacked arrangement, where the stacked arrangement decreases the surface area required for implementation of the device. There is no teaching or suggestion in Van Zeijl that by forming a permanent passivation layer on the emitter prior to silicidation one can *prevent the bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%*

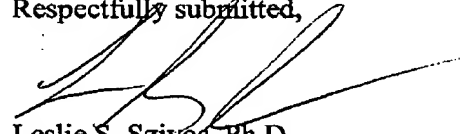
The § 103 rejections also fail because there is no motivation to modify the prior art structures to include applicants' claimed method and structure, which recite that by forming a permanent passivation layer on the emitter prior to silicidation one can *prevent the bridging between silicide regions thereby substantially eliminating shorts and improving bipolar yield by as much as 20-30%*. The § 103 rejections are thus improper since the prior art does not suggest this dramatic modification.

The law requires that a prior art reference provide some teaching, suggestion or motivation to make the modification. In re Vaeck, 947 F.2d 488, 493, 20 USPQ 2d 1438, 1442 (Fed. Cir. 1991). "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. "In re Fritch, 972 F.2d 1260, 1266, 23 USPQ 2d 1780, 1783-84 (Fed. Cir. 1992).

There is no suggestion in the prior art of applicants' claimed method or structure recited in pending Claims 1-18. As such, the claims of the instant application are not obvious from any of the above-mentioned prior art references. Therefore, applicants respectfully submit that the rejections under 35 U.S.C. § 103 have been obviated; and the withdrawal thereof is respectfully requested.

Thus, in view of the foregoing amendments and remarks, it is firmly believed that the present case is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



Leslie S. Szivos, Ph.D.
Registration No. 39,394

SCULLY, SCOTT, MURPHY & PRESSER
400 Garden City Plaza
Garden City, New York 11530
(516) 742-4343

LSS/sf